REMARKS

Claims 1, 3-4, and 8-19, as amended, and new claims 20-22 appear in this application for the Examiner's review and consideration. Claim 1 was amended to incorporate the features of claim 7, which is now cancelled. Claim 8 was amended to correct dependency. Also, claims 9 and 19 were amended in a similar manner to further define the novel features of the invention, namely, that the layer from the remainder portion is detached at the super-weakened region by applying a controlled detachment force obtained by heating at least the weakened zone wherein the heat is applied substantially evenly over substantially the entire weakened zone, and wherein the heating is controlled for evening the heating applied to weakened zone such that the detachment initiates and propagates from the super-weakened region through the main region to detach the layer from the remainder portion. New claims 20-22 are directed to a preferred feature of the invention as recited in paragraph [0037] or the published application. It is respectfully submitted that these claim changes should be entered at this time as they do not introduce any new matter. In view of the following, it is believed that all claims are now in condition for allowance.

Claim 19 was rejected as being anticipated by US patents 6,597,039 to Ohmi et al. ("Ohmi"). In response, claim 19 has been amended to recite the same features as claims 1 and 7, claims that were not rejected for anticipation over Ohmi. Accordingly, this rejection has been overcome and should be withdrawn.

Claims 1, 3, 4, 7-9, 11, 12, and 14-19 were rejected over the combination of Ohmi with US patent 6,1,62,705 to Henley et al. ("Henley") for the reasons set forth on pages 4-6 of the office action, while claim 13 was rejected over the combination of Ohmi, Henley and US patent application 2003/0234075 to Aspar et al. ("Aspar") for the reasons set forth on page 7 of the office action.

Ohmi discloses composite substrates and various methods of manufacture. In one method, the composite member is separated into a plurality of members at a separation area, in which a mechanical strength of the separation area is non-uniform along a bonded face. To do this, especially, in the separation area, a peripheral portion of the composite member is preferably lower in mechanical strength than a central portion. Additionally, the separation area is preferably lower in mechanical strength than the bonded interface. According to another method a composite member formed by bonding a first base substrate and a second base

substrate to each other is separated into a plurality of members at a separation area formed in a position different from a bonded face, a mechanical strength of the separation area being non-uniform along the bonded face, and a mechanical strength of a peripheral portion of the separation area being locally low.

As noted in the office action, Ohmi does not disclose applying a controlled detachment force obtained by heating at least the weakened zone wherein the heat is applied substantially evenly over substantially the entire weakened zone. Thus, the Henley patent is cited in an attempt to remedy the deficiencies of Ohmi.

Henley discloses a method of controlled cleaving process in the fabrication of SOI according to the well known SMART-CUT® layer transfer technology. The controlled cleaving in Henley is obtained by providing pulses of energy, typically at or near the edge of the wafer (see Figures 5 and 6). This helps to propagate the cleaving front throughout the wafer. Also, Henley states that the thermal source may be applied in any manner, including as "time varying, spatially varying or continuous" (see column 7, lines 40-41).

Henley also does not disclose the features of the present claims. In particular, Henley does not use uniform heating as claimed and for that reason adds nothing to the disclosure of Ohmi to result in the present invention. Henley discloses applying a pulse that is clearly localized to the edge of the wafer. If combined with the super weakened area of the present invention, there would be uncertainty regarding the initiation of the splitting either at the super weakened area or at the location were the pulse is applied.

As noted above, the claims have been amended to recite that the layer from the remainder portion is detached at the super-weakened region by applying a controlled detachment force obtained by heating at least the weakened zone wherein the heat is applied substantially evenly over substantially the entire weakened zone, and wherein the heating is controlled for evening the heating applied to weakened zone such that the detachment initiates and propagates from the super-weakened region through the main region to detach the layer from the remainder portion.

The importance of this recitation, as shown in the application, is that the combination of a localized super weakened zone and homogenous heating enable the method to limit and control the occurrence of "hot points" or "hot regions" on the wafer that directly result in increased roughness over the as split surface after the layer is detached (see paragraphs 42 and

43 of the published application). If heat is not homogenously and uniformly applied (as is the case in traditional furnaces) then, despite the presence of the super weakened region, splitting is initiated at hotter point of the furnace (i.e., where the vertical thermal gradient traditionally present in the furnace that would lead to detachment initiation in the superior part of the wafer) [see paragraph 57]. This certainly provides unexpected advantages for the present process that support the patentability of the present claims. In view of this, the rejection based on the combination of Ohmi and Henley have been overcome and should be withdrawn.

Regarding the rejection of claim 13 over the combination of Ohmi, Henley and Aspar, Aspar does not remedy the deficiencies of the Ohmi and Henley patents. Aspar discloses a method for transferring a thin layer from a block of material, which comprises forming a buried zone that is embrittled by at least one stage of ion implantation in the block, with the buried zone defining at least one superficial part of the block, forming at the level of the embrittled zone at least one separation initiator by the use of a first means of separation chosen from amongst the insertion of a tool, the injection of a fluid, a thermal treatment and/or implantation of ions of an ionic nature different from that introduced during the preceding stage, and separating at the level of the embrittled zone the superficial part of the block (or thin layer) from a remaining part, called the mass part, from the separation initiator by the use of a second means, different from the first means of separation and chosen from among a thermal treatment and/or the application of mechanical forces acting between the superficial part and the embrittled zone, but he does not disclose applying a controlled detachment force obtained by heating at least the weakened zone wherein the heat is applied substantially evenly over substantially the entire weakened zone. Thus, this rejection should also be withdrawn.

Another feature of the invention is defined in the new claims. In particular, the "hot point" that corresponds to the location were detachment is initiated can be limited to the size of the super weakened region according to the invention. So by limiting the size of the super weakened area, it is possible to limit the size of the potential higher roughness area where the detachment is initiated. This is the result of the application of heat as described in new claims 20-22.

Accordingly, as all rejections have been overcome, it is believed that the entire application is now in condition for allowance, early notice of which would be appreciated. In the event that the Examiner does not agree that all claims are now allowable, a personal or

telephonic interview is respectfully requested to discuss any remaining issues in an effort to expedite the eventual allowance of this application.

Respectfully submitted,

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Date

Allan A. Fanucci (Reg. No. 30,256)

WINSTON & STRAWN LLP
Customer No. 28765
212-294-3311